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DIGITAL TRANSFORMATION AND DISRUPTION IN THE GAMING INDUSTRY

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ABSTRACT

Purpose of study: Digitization has been the most integral part and a driving force of many industries around the world. Digital transformation across the multiple aspects in the business will not only provide exceptional opportunities for value creation and capture the market, but also represents a source of risk. The gaming industry has grown and gained an important position in the lives of the people. It is stepping up to enhance infrastructure and identifying innovative ways to ensure product and service offerings for the new generation.

Uniqueness of the study: It is based on the transformation of the gaming industry over the years and what changes have technological advancements brought in this sector to enhance the customer experience.

Objective: Study digital transformation in the gaming industry. This article has implications for the managers in the gaming industry by helping them understand the dynamics of the industry and the technologies that will make the future of gaming even brighter.

Research Methodology: A bibliometric research method has been adopted, where industry-relevant information from various online databases, whitepapers, used cases and reports has been collected

1. Introduction

The gaming world has been on a constant evolution since its inception. The era of 1970s marked the inception of the first commercial video games. The design, format, gameplay, and availability of interactive games have been constantly changing with technological advancements and a drastic modification in human lifestyles. Today, games have made their way on several digital platforms like video games on televisions with video game consoles, computer games, games on phones and tablets, hand-held video games, and augmented reality and virtual reality games found on different platforms. With continuing advancements in the development of digital devices like mobile phones and other devices, researchers and game developers are finding out new ways to provide their users with the best digital gaming experience. The global gaming market value has risen to $159.3 billion in 2020 with an increase of around 13.3% from 2019, according to Newzoo market analysis. The market share of the gaming industry is predicted to touch $180.1 billion mark in the year 2021. The market share of mobile gaming or gaming on smartphones is projected to increase by 59% whereas for Personal Computer it is expected to make a profit of $32.3 billion in 2021 and to have 19% of the global games market. Console games are projected at 22%. It is also observed that the revenue grew by over 10% and mobile gaming accounts for $63.2 billion, of almost 47% of the total revenue generated. In the mobile gaming sector, smartphones and tablets accounted for $50 billion (14.2%) and $11.4 billion (7.8%) respectively. Personal Computer (PC) and Console sectors saw the year-on-year revenue growth of 3.2% and 15.2%, which accounted for $33.4 billion and $38.3 billion respectively in the year 2018. The 2020 global gaming market value is increasing at an enormous rate with different devices becoming a habitat for several digital games. Alone the revenue generated by mobile gaming will amount to $77.2Bn.

Objective of the Study: The objective of this article is to study how digital transformation has evolved in the gaming industry, how the mobile and digital gaming application market has been dominating and the challenges faced by the console manufacturers. The article explores the digital transformations and disruptions that have taken place in the gaming industry. It highlights how technology has influenced the gaming industry, and how the mobile and online gaming application market has changed the face of gaming. The research paper aims to gain insight into how the gaming industry has evolved in the digital era, how has it changed the dynamics of gaming on different platforms and what change has it brought to the business and the consumers.

2. Literature review

2.1 Start of the Digital Gaming Era.

Digitization was a phenomenon that changed many dynamics of how traditional businesses used to work. For many businesses the pen and paper culture, maintaining records and files manually changed to a total digital space with the introduction of computers and the connection of different networks [1]. The first gaming device was introduced in 1940 and was adapted on a

mathematical game, Nim that was played by more than fifty thousand participants in a period of 6 months. The computer won more than ninety percent of the games. The 1st gaming machine for commercial in-home usage was introduced three decades later, The "Brown Box", in the year 1967. It was programmed to play a wide range of games like ping pong, checkers, and sports games. Added accessories for games that had a different game playing style for users were included. A lightgun for a target-oriented shooting game. A different toggle attachment used for playing golf putting games. The Magnavox Odyssey was discontinued between August 1972 and 1975, around 300,000 consoles were sold. Mismanagement in-store marketing campaigns and gaming still being an alien concept in the US, led to poor sales at that time. This marked the birth of digital gaming.

2.2 Launch of Arcade Gaming

Gaming companies Sega and Taito brought an interest in the mind of the people by introducing a new phenomenon of arcade gaming. Electro-mechanical games like Periscope and Crown special Soccer were marketed heavily in 1966 and 1967. Atari became the very first company to set a mark for a large scale gaming community. These games built competition among players, who would play and record high scores to become the top scorers [2]. Atari created a new industry around arcade gaming. Retailing at $1,095 in the year 1973, Atari began selling the first electronic video game called Pong. The gaming machines were soon to be seen in bars and shopping malls around the world. The video games market expanded at a huge rate between 1972 and 1985 with 15 companies started developing arcade games.

In 1973, Empire – a strategic game played with eight players was created for Programmed Logic for Automatic Teaching Operation, also known as PLATO. It was one of the first computer-based teaching systems. PLATO was limited to universities and institutes and Atari, who could afford the price of multiple connections and computers for joining the network. PLATO was one of the first steps taken in the multiplayer gaming and represents the technological advancements that the internet brought with it.

2.3 Gaming at Home

The year 1970 saw a huge usage of personal computers and gaming consoles become a reality. Advancements in technology like Intel's first microprocessor led to the creation of games such as Gunfight, a multiplayer human-to-human combat shooter. As the home gaming culture boomed, there was also a rise in the gaming community. The integration of the microprocessors led to defining a new era of gaming. The sales shot up to two million units in the year 1980. In the late 1970s and 1980s, a sense of community was created among the people who became fond of the new developing culture of gaming with multiple gaming magazines for people to gain knowledge and know what was the upcoming trend in the industry.

2.4 The Rise of the Gaming Culture in Personal Computers

Personal computers like the Commodore 64 and the Apple II were gaining a lot of popularity where on the other end the gaming consoles rating was going low. The computers were sold at a very affordable price and were also marketed and advertised as a sensible option for the family. [2]

The personal computers had a better and a powerful processor than the consoles which opened doors to the next level of gaming. The computers came with the technology that offered the gamers to create and develop games of their own [3]. Bill Gates also designed a basic game, called Donkey and interestingly Apple got it on its application platform for mobile phones back in 2012. Early systems such as Macintosh and other consoles allowed gamers to connect with the devices of others. Midimaze was introduced to the Atari ST that allowed 16 consoles to connect through their MIDI-OUT and MIDI-IN port.

The concept of multiplayer gaming became a trend amongst the people with the introduction of the LAN gaming phenomenon. It grew popular with games like Marathon and first-person shooter game – Quake. Also, the release of affordable Ethernet cards in the computers for better networking and an advanced window OS called Windows 95 grew the popularity of multiplayer gaming to the next level. The revolution in the gaming industry came when computers connected over a LAN network and later the internet. This changed the traditional gaming experience, and gamers got the chance to compete and play with other gamers. [3]

2.5 Online Gaming on Consoles

The online gaming culture was not so much in practice amongst the gamers till the release of next-generation sixteen-bit consoles in the year 1990. The internet became a technological gateway that allowed users to download and do other gameplay activities on their consoles. [4] Atari, Sega, and Nintendo wanted to make their way into online gaming with the help of cable providers but couldn't because of different problems caused by the internet like slow internet and little bandwidth problem. Later in the year 2000, Sega came with a console that overcame these internet problems called the Dreamcast. It struck as a revolutionary system to the gamers and became the first internet-centric system to gain popularity but later eventually it became a failure that affected Sega's console market drastically. The learning from the failures and market generated by Dreamcast made a pathway for the next generation of consoles like Sony's Playstation and Microsoft's Xbox.

2.6 The Modern Age of Gaming

The year 2000, exploded in many technological aspects with respect to the Internet and computer processor advancements. The graphics, the rate at which the game would run and the processing speed was improved to provide the gamers with better gaming experience. Due to the drop in the price rate of the affordability of the internet and the accessibility to a billion people around the world helped provide this experience. Online markets like the Xbox Live Market place and Wii Shop invented and transformed the way to buy games,

update and connect with other players. The latest ESA gaming report shows fifty four percent of gamers think gaming helps them connect with friends and forty five percent think it is a way to connect with their family. By the time new versions of Xbox and Playstation came out, online multiplayer gaming experience became one of the most integral part in modern gaming.
Clan culture where multiple gamers formed a faction who played first-person shooter games regularly became a new trend amongst gamers. The clans ranged from few friends to a hundred people organization. Clans are rated and can compete against each other. [5]

2.7 Mobile Gaming

The smartphones were a significant upgrade in mobile phone technology. They have brought many changes in the device configuration from making the processor more powerful and increasing the RAM size, resulting in shortening the gap between PC and mobile phones [6]. However, one of the latest trending technology in video gaming is 4k technology, which allows the users to have an incredible experience with the number of pixels of more than 8 million. The app store opened doors not just the developer to develop mobile games but also the buyers. The mobile phone users, who were not even the avid gamers got a chance to play games from an Angry Bird to Call of Duty on the palm of their hand. [7]This was a huge shift for the gaming industry to come into the mobile phone space. Popular game Angry Birds made Rovio $200 million in 2012 and broke 2 billion downloads in 2014. The revenue generated by the Mobile gaming companies on app stores has generated enormous revenues with the numbers of downloads increasing day by day. Mobile phones also made better usage of Alternate Reality and Virtual Reality technologies. [8]

2.8 The Future

1. 3D Design Software: The video games earlier were 2D and the gamers could only move the character in Upward, downward, forward, and backward directions. With the improved 3D design, the games became more dynamic. In addition, more pixelated and realistic graphics have added realistic animations to the game that draws the gamers in. [9]
2. Artificial Intelligence: Artificial Intelligence or AI has always been a part of gameplay since its inception (where the user or the gamer is playing against the computer). However, today AI has become a growing, evolving, and more intelligent technology. The games are a lot more challenging than before and AI is continuing to get smarter by the day. [10]
3. AR, VR, and MR: The future of Gaming – Virtual Reality or VR is the latest form of technology transforming the face of the video gaming market. It not only allows gamers to interact with the characters in the game but also enhances the virtual experience of living the game and becoming part of the action onscreen. According to Nielsen Games 360 US report 2018, it is observed that 66% of gamers are aware of AR/VR gaming devices (Nielsen Holdings United States, 2017). Augmented Reality (AR) and Virtual Reality (VR) provide the user with an entertaining environment and improved user

experience. It provides an appealing and new look at the games that make both avid gamers and occasional users spend more time. The digitally extended reality provides gamers with attractive virtual objects and makes the players treat them as real [11]. Mixed Reality (MR) is ushering in a golden age of gaming by providing an immersive virtual environment and enabling gamers to experience VR on their gadgets.

4. Blockchain in Gaming: By using Blockchain for the digital identity of a user can safeguard the login details for various games that he or she plays and can increase security. It can also help in integrating the virtual currencies into the gaming domain like enabling the developers to collect royalties for the items and other micro-transactions across the gaming ecosystem. Blockchain benefits include the tokenization of virtual goods or assets in the game, safe and secured storage of data related to the game. [12]

3. Analysis

The inception and advent participation of the Indian population in the online gaming industry started back in the year 2000. Personal computer and the console driven gamers started using the digital gaming platform. In the mid 2000s, online games were in the form of social games. The Indian ecosystem that was developing acted as a service provider for international companies. Since that time, India became a base and grew as a country with a huge population using smartphones and the internet. Currently, the online Indian gaming market stands at USD 290 million and is expected to grow to USD 1 billion by the year 2021. The gradual rise in consumption, the local development is expected to expand traditional service providers and local companies to create an end to end games. Also, the Freemium model expects to improve the monetization condition for game developers in the online gaming culture.

The market value of online gaming rose to USD 290 million with an impressive online gamer database of 120 million in 2016. This was due to the affordable smartphones among the population and caused a widespread use of online gaming applications amongst users. A major revenue chunk for the gaming industry for many application companies came from in-app purchases, pay per download, subscriptions, etc. Also the advertisements during or between games provided a huge revenue to the gaming company.

The present analysis about Indian gamers shows that in the future the country will move towards local development and work towards value-driven consumption. The gaming industry is expected to achieve a mark of 1 billion USD of market value and more than 300 million online gamers by the year 2021.

The 28% CAGR growth will be driven by the following:

A summarized pie chart description of the development in the online gaming industry in India by 2021:

3.1 Factors leading to the growth of building a progressive gaming culture in India:

Many factors lead to the progressive culture of online gaming amongst the Indian population. The advent rise of the use of the digital payment system in India is one such reason. Due to the demonetization and the Digital India movement, a lot of people switched to the online payment mode. It was a slow and gradual move for Indians but with businesses, both big and small and the easy way to track your transactions made it a successful move. Also, people can pay for various apps and games that demanded in-app purchases, etc.

The constant evolution in technology is making the technology more and more accessible and affordable by the people. Virtual Reality technology is very much affordable now by the Indian population.

With gaming development playground being a learning ground for local developers, we can see a wave of many online games developed in the coming years.

One of the most important factors is to connect with the local audience or users. Keeping this in mind, one of the key drivers is that gaming themes, content, and gameplay are developed by giving preferences to local languages. Indian Internet users are expected to grow to five hundred and forty million in the year 2021.

Analysis of Indian Gamers

An average online gamer of India is mostly below the age of 24 and is a male. The younger generation and population are preferred to play games online. Around sixty percent of smartphone gamers are below 24 years old. They are usually more exposed to technology and stay online more. Also, homemakers and experienced professionals have a similar tendency as the young, like play online games and most of it is because of the accessibility of affordable internet. As per gender, 83 percent of gamers who play online are male. [13]

Most of the time the tendency to develop a gaming habit or a more likelihood towards gaming online is introduced through friends and families. People with similar interests interact and feel like a part of a community. Moreover, for many people gaming helps them to relieve stress and stay happy. It works as a great hobby for them. [14][4]

If we talk about engagement levels of different genres of gamer, the most preferred ones are puzzle, action, and adventure. Also, there are different things that a person sees when he wants the best experience while playing it. Like male gamers mostly are concerned about the consumption of memory, data usage, graphic quality, etc whereas the female gamers want a regular upgrade on the game they are playing.

A gamer that is paying for the game download or paying for other gaming services provided by the company, spends more than one-third of their money on gaming. If devices are concerned, heavy gamers or people who spend most of their time playing games prefer consoles and big monitors for playing but the most preferred devices for playing games are mobile phones because of their affordability, ease of use, accessibility of the internet and multi-purpose use.

3.2 The Future of online gaming in India:

Improvement in age and gender parity: The boom caused by digitization has caused people to switch and change to the evolving world. As the numbers increase in the people using a mobile phone daily in millions by the day, online gaming is sure to see a change in the age chart of the gamers. The major change will likely be seen by the contribution made by gamers from the age group of 25-40 years and are expected to comprise 42 percent of the total gamers database by the year 2021. The main cause of this shift could be because of a comparatively large influx of more than 30 million gamers from the age group of 20-30 years and the usage of the internet to play online games. [15][16]

Considering the same scenario in gender parity, women will comprise 33 percent of gamers in the Indian population by 2021, growing at a CAGR of 35 percent.

Better revenues for gaming companies by creating Freemium games: The Indian gaming market is price sensitive and value for the money market. Most of the Indian gamers or people who like to play any game online usually search for free games or alternatives to the paid versions. The gamers of China are similar to that of India. Chinese gamers pay for virtual products, extra life in games, rewards, and advancement to the next level. The same case can be said for Indian gamers. Also, many companies create revenues by the usage of the gacha mechanism; it is a luck-based system in games, where the chance of earning a reward is 50-50. Gamers pay in anticipation of any reward that helps them play the game. Gacha mechanism is gaining a lot of popularity in many gaming markets. The multiplayer gaming culture has a higher chance for gamers to play in the future.

With digitization being a major part of the online gaming culture, a new payment system is important for targeting new gamers. Payment systems such as e-wallets, debit or credit cards, etc are popular and a great way for gaming companies to grow economically. The popularity of the payment methods in the Indian market can be leveraged by developers. The next step could be paid by gift cards by the user.

Stakeholders to adopt and use mobile internet: The future projection of smartphones and internet users in India is 470 million and 735 million respectively. The decrease in the price of mobile phones may cause a change in people's perception of buying a feature phone. Currently, the Indian market only comprises 30 percent of online gaming amongst the online population and is expected to bridge the gap with the developed nations where nearly 70 percent of the population plays games online. Many developments in the overall gaming ecosystem are needed.

The coming years will see evident changes in the online gaming ecosystem.

- Games with improved graphics and quality
- Enhancement of gameplay experience through videos
- Launch of OEM devices for gaming
- Affordable data network for gamers will be provided by Telecom companies.

Rise of new and emerging technologies in online gaming

Change is a very integral part to survive in any industry, with new digital technologies evolving the online gaming experience of the gamer. The convergence of technology involves device integration used by mobile internet users. Following upcoming technologies will help drive this integration in the gaming ecosystem.

- Virtual Reality or VR
- Augmented Reality
- Artificial Intelligence
- Cloud-based architecture

Esports to increase the engagement levels in online gaming

Esports is currently a new concept in India and is a growing technology with great potential in online gaming. In the past, many gaming leagues were successful. Many other esports competition organized by various companies is being hosted round the year and provide great revenues to gaming companies. The inclusion of online mobile gaming with traditional LAN gaming tournaments will be helpful for the Indian gaming industry. The tournament gives the gamers a chance to showcase their gaming skills to a bigger community and increase their engagement levels. Many professional gamers take the path of making digital content related to information about the game, features, upgrades, etc. The digital entertainment industry has witnessed a rise in videos and channels with dedicated content related to gaming.

Gamification – Opportunities across the business ecosystem

Gamification or application of gaming operations and mechanisms in non-game situations is used as a tool to increase operations and enhance customer/employee engagement levels. This concept is gradually merging with enterprise technology solutions and tools such as CRM. Less than ten percent of Indian companies are using gamification but it has been proved successful in many used cases. E-commerce companies used games such as scratch cards and spin the wheel to engage more customers. Interactive and incentive-based learning concepts are being adopted by technology companies and recently an online education portal launched a new way to train children through games, simulations, and videos.

Relatable content for the Indian Gamer

Online gaming has been changed because of digitization and has redesigned the traditional form of gaming. The Indian game developers have taken full advantage of this technology and recreating new games in native languages and subjects. Further augmentation for local content can be done by adapting local languages. By appreciating, recognizing and respecting the Indian culture, local creators & developers are creating locally themed games. Online games like ‘Rummy’ and ‘Teen Patti’ are some games that have been brought into the digital space to attract more Indian customer base. The concept of localization can help in building on local brands and succeed to provide a feeling of nostalgia amongst the Indians. The success of AR games was primarily

because of effective engagement by bringing together franchise themes and mobile gaming reality. Some examples like – A famous top-grossing movie-themed game secured the first position in "Top Freemium Games' on a leading app distribution store within two days of release and witnessed around two hundred thousand installations within the first 24 hours. The online gaming market in India is expected to recreate traditional brands and introduce entertainment brands.

3.3 Case Study Analysis for digital transformation in the Gaming Industry

1. Supercell using Amazon Web Services (AWS) for cloud-based gaming Infrastructure

Supercell, the Finnish company's 4 games (clash of clans, clash Royale, Boom Beach, and Hay Day) have more than 100 million active gamers on iOS and Android devices in total every day. Supercell, one of the highest-grossing gaming companies has made $1.4 billion in revenue globally in the year 2018, as per Sensor Tower market analysis (Mike Minotti, 2019). It is to be noted that Supercell valued at $10 billion in the year 2016 with a profit of around $1 billion on sales of $2.5 billion in the same year, indicates a dip of revenue over the past two years because of saturation (Reuters, 2017).

Supercell designed these games specifically for mobile phones and tablets. Supercell aimed at designing games that will be played for years, and focused on real-time online multiplayer games. Taking advantage of the booming smartphone industry and a surge in internet usage, they developed games with a different and interesting concept with lucrative 3D designs in the cloud-based platform.

Supercell utilized the services of Amazon web services not only for cloud gaming purpose (that were easy to use, powerful, and reliable), but also for the set of services that match the requirement for high gaming performance, scalability, and rapid growth. In addition, it provided an infrastructure for managing the data pipelines, web-based offerings, and an analytics platform.

2. Niantic's Pokémon Go – the most popular AR game

One of the reasons for Supercell games being saturated is the inception of Pokémon go in late 2016, which accrued more than 550 million installs and made revenues of $470 million in the first 80 days after its launch (Newzoo Games & Emmmsports Analytics and Market Research, n.d.). It is estimated that Pokémon go have made a revenue of $795 million globally in 2018, as per Sensor Tower Market Intelligence reports. Pokémon go has also recorded a lifetime revenue of $2.2 billion since its launch in 2016 and is expected to continue its level of success in 2019 as well and surpass $3 billion marks of lifetime revenue this year (Stefanie Fogel, 2019).

Pokémon go has proved that Augmented reality (AR) can be applied in many ways that appeal to the mass audience. Niantic acquired the AR-based start-up, Escher Reality that enabled to build cross-platform and multi-user experience for the gamers. It enabled gamers across the globe to interact with each other and the superimposing of the virtual images created on the player's camera screen view of the real world has resulted in its resounding success. [17][18]

3. Player Unknown's Battlegrounds (PUBG) – redefining 3D real-time replay technology

PUBG, the most prominent online game has dominated the Indian video game market. The growth in this kind of battle royal genre is majorly driven by the increasing smartphone penetration. PUBG has recorded over 200 million downloads excluding China by the end of the 2018 and PUBG mobile have seen over 100 million registered users within four months of its launch (Business Today, 2018).

PUBG is designed with a newly launched technology 3D replay that sounds minute has picked up a lot of traction and it leads the player to capture or view the video even after the player is dead in the game. It is enabled with the features of changing the speed of video and camera angles. These features are the main reasons that contributed significantly to the success of PUBG. However, a ban on PUBG in various regions in recent times due to various factors like excessive addiction might hamper its growth in the near future.

4. Google's Stadia – Cloud Gaming Venture of online streaming Game

Google is expected to flip the gaming industry with its new cloud gaming venture, which started as project streaming and is now shaped as Stadia. Stadia eliminates the need for equipment like consoles, time-consuming downloads, and updates. Although Google is expected to launch Stadia anytime in 2019, it is already been called as Netflix of gaming. Stadia works just like Netflix as Google servers run the game and end the visual output in 4k and 8k resolution with 60 and 120 frames per second respectively, through the internet on the gamer's device. The gamer just has to choose a game from the collection of games available and can start playing it with one click instead of any downloads and updates. Google has teamed up with AMD for developing the advanced architecture of graphics and other features required for the Stadia platform to support any device with intensive processing in its data centers.

4. Conclusion

Although mobile gaming has disrupted the video gaming industry, as the majority of gamers prefer portability, it is to be noted that console and mobile gaming still serve in different markets. Hard-core gamers still prefer the console and PC gaming to the mobile gaming for the technologies like gesture detection, motion sensing which is accurate with consoles. Although consoles provide high power, bigger display size with 4k video, enhanced storage, and many more features, Smartphones are also superior with the cloud gaming and alternatives that enhance the gaming experiences. Overall, the Gaming Industry is doing exceptionally well and is rapidly growing at a faster pace.

Indian Online Gaming's next phase will comprise engaged gamers, skilled designers, Empowered investors, and developers, and together they will work to make India a global success in production and creation of locally themed games.

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